PACKAGING

THE CAHNERS MAGAZINE FOR DECISION-MAKERS/OCTOBER 1990

PRODUCTIVITY EQUATION

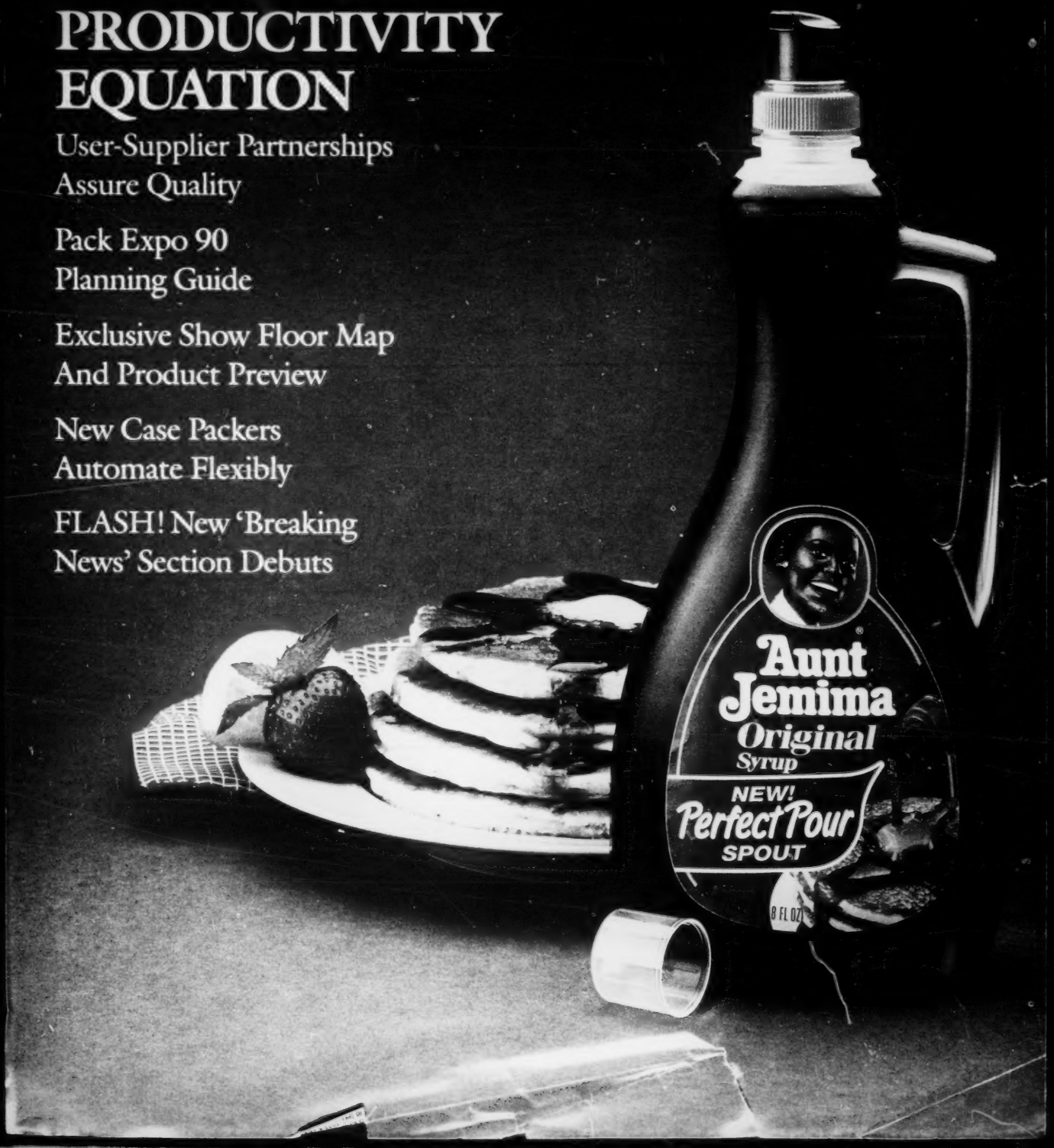
User-Supplier Partnerships Assure Quality

Pack Expo 90 Planning Guide

Exclusive Show Floor Map And Product Preview

New Case Packers Automate Flexibly

FLASH! New 'Breaking News' Section Debuts



BREAKING NEWS

New container supplier formed: Silgan Plastics is the name of a $280 million company formed from five plastics and packaging companies by R. Philip Silver, D. Greg Horrigan and Morgan Stanley. Silgan Plastics, to be headquartered at St. Louis, Mo., will maintain 16 manufacturing locations in the U.S. and Canada with 2,000 employees. Focusing on packaging, the new company includes the assets of InnoPak Plastics of St. Louis, Fortune Plastics of Richmond, Va., Aim Packaging of Port Clinton, Ohio, Express Plastics of Toronto, Canada, and Silgan P.E.T. Corp. of Atlanta.

Italian company buys Paxall: Sasib S.p.A. of Bologna, Italy, has acquired The Paxall Group, manufacturer of packaging machinery in Skokie, Ill. Sasib produces packaging and processing machinery. Heyn Kjerulf, president of Sasib Corp. of America, has been named Paxall president, an office that was vacant for the past several months.

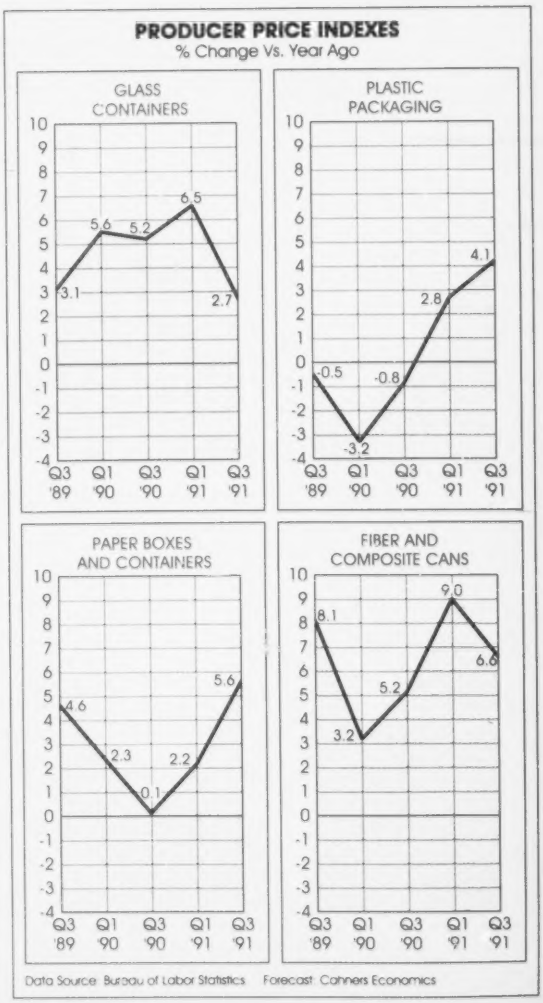
Poll finds No. 2 waste concern: A new Roper Organization poll shows that Americans think plastic packaging is the nation's second most serious cause of consumer solid-waste problems. Commissioned by S.C. Johnson & Son, Racine, Wis., Roper polled 1,400 adults on a wide range of packaging and environmental issues, including many related to aerosols. Among the findings are these: 74% of the respondents favor mandatory recycling of bottles, cans and newspapers in their community; 69% support requiring manufacturers to sell household and personal-care products in refill form. The No. 1 consumer solid-waste problem according to the respondents is disposable diapers.

Aerosol study predicts growth: Filled aerosol demand in the U.S. will rise 4.3% per year through 1994 to 3.6 billion units according to The Freedonia Group Inc., Cleveland, Ohio. A new study from the research firm says demand for steel aerosols will rise 3.7% per year to 3.2 billion units while aluminum aerosol demand grows by 9.7% to 365 million units.

Single-serve Super Glue makes debut: Super Glue Corp. has introduced a blister-packed pouch of five one-use ampuls containing its fast-drying adhesive. According to the company, the break-apart plastic ampuls are a reponse to consumer complaints that unused glue dries in the tube and blocks the applicator tip. The new ampul is itself resealable, since a flange that breaks away to open the ampul doubles as a closure. Inside the foil-based pouch is a desiccant to keep leftover glue fresh. The blister, from Alloyd Co., is noteworthy: it's made of recycled plastic.

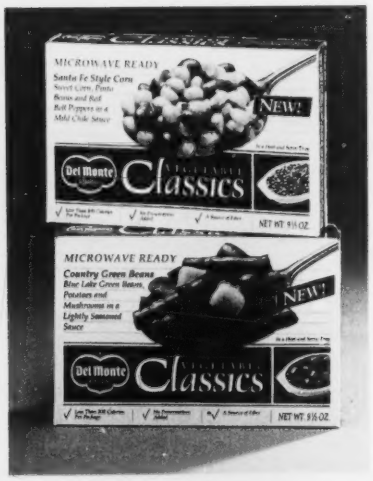
KEY PRICES TO EDGE UP

Prices of four key packaging materials and containers are headed up during the next six months, according to forecasts by Cahners Economics. Cahners expects price increases for glass containers, plastic packaging and corrugated paper products to rise moderately. Price increases for composite cans, for which there has been very strong demand, are forecast to jump substantially.

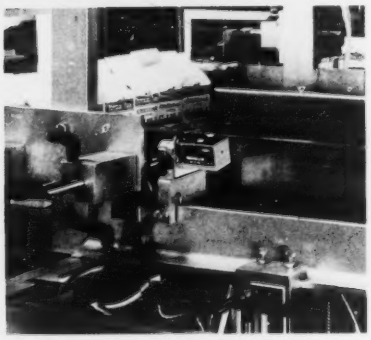


PACKAGING

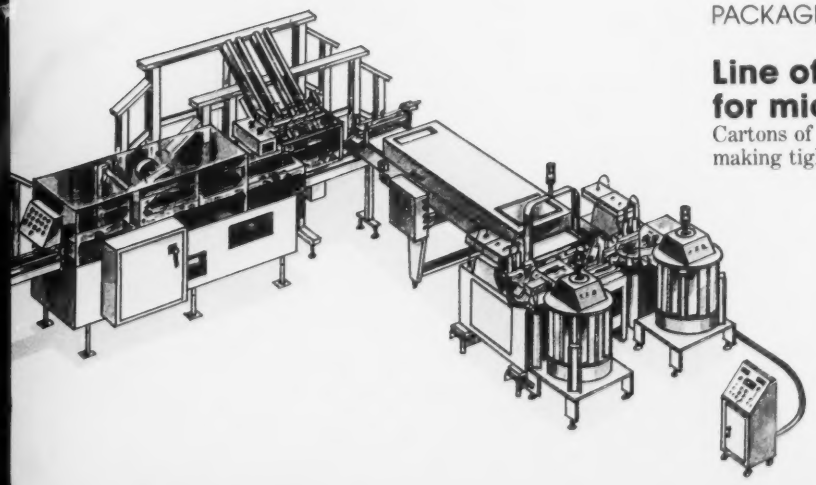
A CAHNERS PUBLICATION
VOLUME 35 NUMBER 12



Teamwork between users and suppliers is crucial to the quality-control effort. Page **26**



Case-packing advances boost product protection at lower cost. Page **60**



Use of electronics creates new line that meets goals without exceeding realistic level of technology. Page **52**

PACKAGING FEATURES

SPECIAL REPORTS

Formula for quality: user-supplier teamwork **26**
Productivity, quality jump when packagers let trusted suppliers share in the QC effort

Pack Expo 90 Planning Guide **72**
Nearly 900 exhibitors will pack the halls of Chicago's McCormick Place Nov. 12-16

IPW Roundtable: The art of introducing new technologies **86**
Bringing in new packaging technologies along with balancing different goals reveals the value of system-thinking

Pack Expo Product Preview **95**
An exclusive report on new innovations in machinery, materials and containers

PACKAGING OPERATIONS

Line of Month: Line sets pace for microdisk packaging **52**
Cartons of 10 microdisks get printed wraps, making tight, square packs for display

On the cover:
New spouted closure from Creative Packaging tops Aunt Jemima Original Syrup with increased consumer convenience. Page **14**

Full-body shrink labels cut redecoration costs for filled aerosol cans. Page **15**

PRODUCT BREAKTHROUGHS

Making a case for case packers **60**
Anything but glamorous, they're taking the spotlight as packagers strive to boost product protection at low cost

PRODUCT REVIEW

Basics of paper-based bags **67**
How to find your way (into) a paper bag

PACKAGING NEWS

Spouted closure pours perfectly **14**
Aunt Jemima syrup's less-messy closure to go national

Multitrip PET bottle expands in Europe **15**
Coke, Pepsi plan national use in Holland and Germany

Multicompartment blister holds vitamins **16**
Consumers need to open only one blister to take four tablets

Seattle-based brewer refilling bottles **21**
Consumers return bottles to recycling centers for cash

PACKAGING TECHNOLOGY

System inspects labels before and after **150**
Camera verifies coding before label cutting, label presence and placement after application

Collator/wrapper cuts manpower 72% **150**
Automatic feeders collate 12 cards before shrink-wrapping

Productivity doubles with foam cushions **152**
Bag forms cushion around fragile porcelain figurines

Nine-week shelf life sells fresh pasta **152**
Bold colors on bilingual label draw attention in Canada and U.S.

DEPARTMENTS

BREAKING NEWS	1	NEWS BRIEFS	155
EDITORIAL	11	CALENDAR	155
ON THE LINE	12	PEOPLE	157
ENVIRONMENTAL NEWS	21	CLASSIFIED	158
PACKAGING EQUIPMENT	96	ADVERTISERS INDEX	172
PACKAGING MATERIALS	142	READER SERVICE CARD	173

THE STAFF

JOHN BLATNIK
Publisher

R. BRUCE HOLMGREN
Editorial Director

ROBIN ASHTON
Editor in Chief

MERLE MULLINS
Managing Editor/Production

GREG ERICKSON
Managing Editor

MELISSA LARSON
Senior Editor

MARK SPAULDING
Senior Editor

LISA McTIGUE PIERCE
Staff Editor

JUDY WHITT
Director of Art Department

GLEN LUENSMAN
Assoc. Dir., Art Department

PATTY CAHILL
Senior Art Director

KRISTA COLTRIN
Associate Art Director

GILBERT MUÑOZ
Director of Graphic Production

RALPH A. BURRIS
Production Supervisor

KATHY KIKKE
Advertising Production Manager

NANCY COOPER
Director of Advertising Contracts

KRIS CUNNINGHAM
Circulation Manager (Denver)

EDITORIAL OFFICES
DES PLAINES, ILL. 60017-5080
Cahners Plaza
1350 E. Touhy Ave. P.O. Box 5080
708/635-8800

ERNIE KUMMER
Dir. Corp. Reprint Services

M.R. ROBINSON
Vice President Research
Bureau of Marketing Research
LARRY HAYSResearch Director

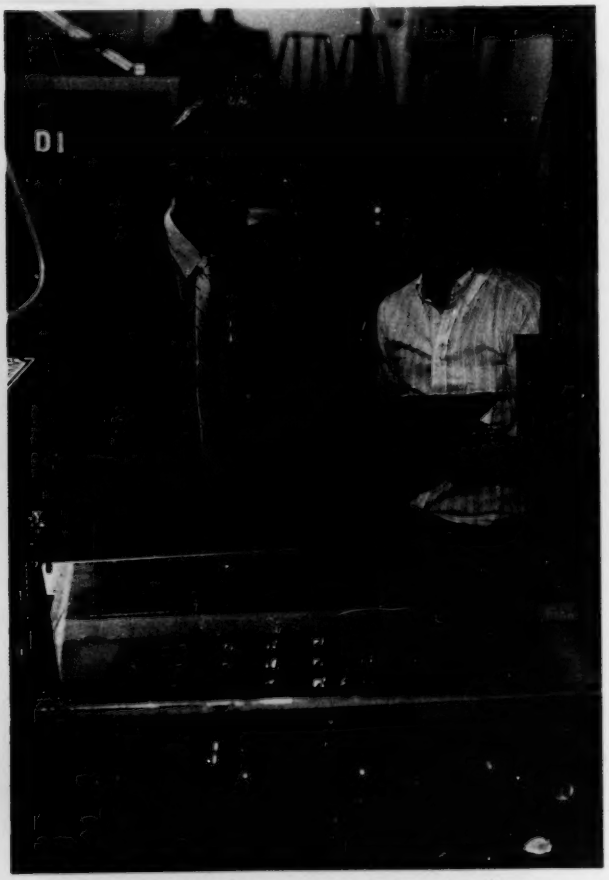
KATE JERNEY
Administrative Services

MARY WILLIAMS
Manager, Marketing Services

CHARLES E. MOODHE
Senior Vice President/General Manager
Chicago Division

Formula For **Quality:** User-Supplier Teamwork

Productivity and quality jump when packagers let trusted suppliers share in the QC effort. Here's how they make these crucial partnerships work



Conferring on quality: Inspecting sealed roach bait arrays are (left to right): Richard Baradic, S.C. Johnson's insect control custom manufacturing manager, Roger Babler, Placon's production supervisor, and Jim Vaughan, process improvement monitor at Placon.

By Melissa Larson
Senior Editor

New relationships are being forged between packagers and their trusted suppliers. The best partnerships are yielding improvements in quality and operating efficiency that previously seemed unattainable.

Not too long ago, packagers looked upon a supplier as a necessary evil—someone who could sell them what they wanted, but who just might, they feared, tell a competitor their secrets. Suppliers were not trusted with proprietary plans for the future or information about new products and lines.

In some cases, suppliers delivering goods were not even shown the packaging line where their machinery or materials would be used.

In turn, some packaging suppliers viewed their customers only in terms of the dollar amount of their orders. They weren't interested in customizing products to fit a particular need or in finding out more about a customer's business so they could help him grow.

Some of those packagers and suppliers are now out of business. The survivors have learned some tough lessons about working together to succeed in today's highly competitive market.

Certified vendor or preferred supplier arrangements entail risk and hard work on both sides. For packagers, instituting such a program involves sharing with suppliers detailed information about the company's processes and products. Some organizations simply aren't comfortable with this philosophy.

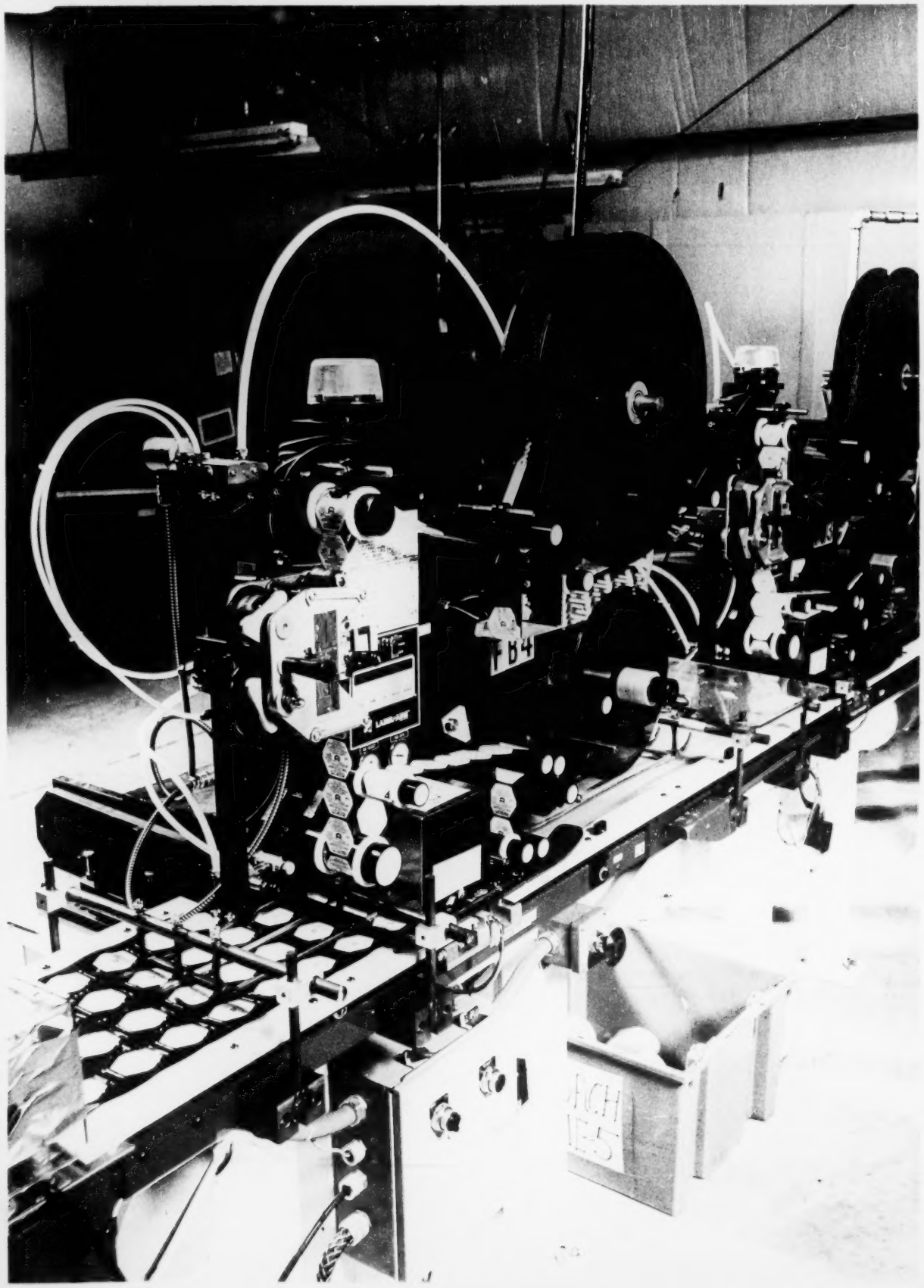
A permanent project

For suppliers, certification is difficult—sometimes even impossible. It often means initiating or updating statistical process control programs. It means a commitment to continually improve products and processes. Even after certification has been granted, periodic visits and yearly reviews keep the pressure on. To that extent, it's a permanent ongoing project.

Yet the drive for world-class manufacturing and competitive pressures both here and abroad have more U.S. companies scrambling to establish these programs.

Packaging for S.C. Johnson Wax' line of ant and

Four-across labelers keep up with production. Placon made a hefty investment in equipment for the insect bait line.



Advice from packagers who've been there: certified vendor programs require patience

roach baits, including the new Raid Max brand, requires PVC thermoforming and die-cutting, plus sealing technologies that lay outside the expertise of the Racine, Wis. manufacturer of household products.

Within six months of signing an agreement with S.C. Johnson Wax in 1984, thermoformer and contract packager Placon in nearby Madison had built a 30,000-square foot facility and installed machinery to assemble and package roach baits on its own premises.

"Placon functions as an extension of SCJ's process," explains Joan McNulty, Placon's director of marketing and product development. "We've geared ourselves toward solving their problems."

Placon forms the bait pellets, thermoforms the black PVC parts which become a multiple-bait array, and seals the bait pellets into individual hexagonal disks.

Each disk in the array then receives a pressure-sensitive label hot-stamped with a batch code. A punch press separates the disks into groups of six. Polybagging each set of six, and then inserting them into a distinctive silver Raid Max carton, takes place in a different area of the same facility. The case-packed product is then shipped to an S.C. Johnson Wax distribution center.

Joint monthly meetings involving key personnel of both companies take place at Placon headquarters. Materials, production and quality issues are discussed. This way, potential problems are headed off before they can cause trouble, according to McNulty.

Placon personnel also make frequent trips to SCJ's Racine headquarters.

The end result? S.C. Johnson Wax has substantially reduced incoming inspection of the roach bait packages and the labor and expense involved. Placon recently received SCJ's Quality Supplier Award—the first ever awarded by SCJ to a contract packager.

Outlining specs

Some packagers even enlist suppliers' help in establishing specifications. Chicago-based Soft Sheen Products Inc. is in the process of increasing the emphasis placed on quality packaging materials for its line of hair-care products.

Currently, the company's in-house quality-assurance group spends significant time and labor inspecting and testing incoming plastic packaging materials. That will change.

Technology partnership: Del Monte's development of shelf-stable, microwavable Vegetable Classics required close cooperation with tray, lidding and machinery vendors.

"We took a hard look at our present quality-control process and discovered that with our suppliers' help, we could increase our efficiency and accuracy," says Blandon Dwyer, Soft Sheen's purchasing manager.

The joint efforts of Soft Sheen and container supplier Berlin Packaging are now focused on completion of a manual, which will outline specifications for packaging components used by Soft Sheen.

Berlin's responsiveness to Soft Sheen's needs in a variety of areas led the hair-care company to confer "primary packaging supplier" status on the Chicago supplier of containers and closures.

"We realized that we were turning to Berlin more frequently for rush orders," says

STARTING A CERTIFIED VENDOR PROGRAM

We asked some of the packagers involved in this article what guidelines they had for companies thinking of instituting a certified vendor program. Here are their compiled comments:

Organize internally: Establish an internal quality control group, familiar with SPC techniques and with your company's operations, which will spearhead the effort and perform most of the post-certification monitoring. It is vital that these staffers be familiar with SPC procedures.

Clue your vendors in: Many packagers recommend "vendor days," when all vendors are invited to tour the facility and listen to presentations from production, engineering and quality control staff.

Acquaint all suppliers with the speed of your packaging line and the interplay of the various material and machinery components. Show what happens when quality lapses occur. If you're planning to announce a new vendor-certification program, now is a good time.

Learn from them: Don't be too proud to learn something from a vendor. They can offer beneficial insights into your operation.

Have patience: Taking a certified vendor program from concept to reality, where you are actually able to certify some vendors, may take up to three years. Stay the course.

Be a good partner: A successful partnership requires open communication from your company. If a vendor is having trouble meeting a spec, find out why, and work with him to correct the problem if possible.

Dwyer. "It became apparent that working with them as a primary supplier could help reduce some of the difficulties we were experiencing."

A joint investigation of Soft Sheen's procurement and inventory process for plastic packaging led to the implementation of inventory management and just-in-time delivery programs. These reduced overall materials and operating costs.

Even ordering has been streamlined: A multiple-part order form has been replaced by a one-page faxable document.

Something altogether new

American National Can and Mahaffey & Harder were more than suppliers to Del Monte Foods USA when the food giant first conceived a line of shelf-stable, value-added microwavable vegetables: They were full partners. "The development of Vegetable Classics required an extremely close partnership with these companies—in effect, joint development," says Tom Koneval, Del Monte packaging development group leader.

Since the product and package were both new, Del Monte and its suppliers/partners were charting new territory together—with no technology precedents.

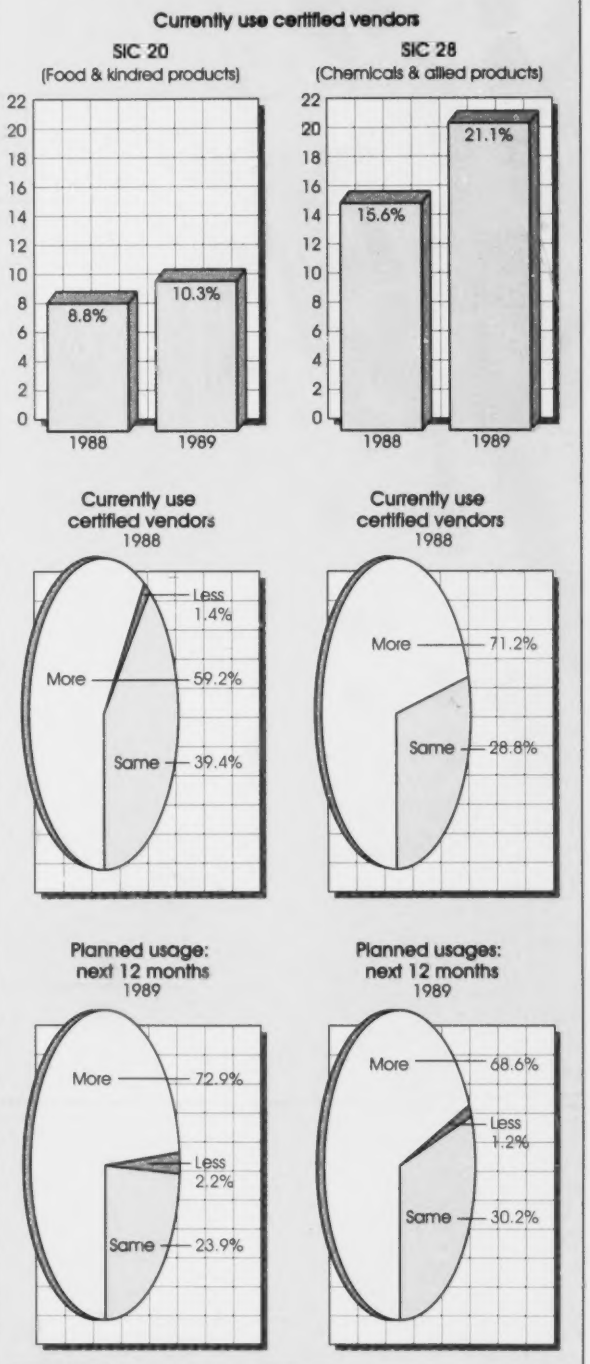
"Our number one priority was seal integrity of the lidstock to the tray," says Koneval. "With American National Can, which initially supplied both the lidstock and the tray, we developed a series of specs governing the level of oxygen barrier, the materials' performance under a 260° retort, drop and burst tests for seal integrity and lid-stock peelability."

American National Can remains the sole supplier for Vegetable Classics' plastic lidstock while sharing tray-supplier status with Rampart Packaging.

Both Del Monte and American National Can have worked closely with tray-sealer supplier Mahaffey & Harder.

"ANC provided drawings and tray samples to Mahaffey & Harder as they were developed. Later, various lidstock samples were sent to them for formability, sealability and line speed effects," says Konevel.

CERTIFIED VENDOR PROGRAMS PROLIFERATE



Source: PACKAGING magazine's annual materials surveys

Certified vendor programs, already well entrenched in the drug industry, are increasingly popular among food packagers.

Bagging a customer

Eastman Kodak's "Quality First"(Q1) program is regarded as one of the most advanced and comprehensive quality-control programs in the nation. Introduced in 1982, the program has enrolled more than 100 Kodak suppliers to date.

All major commodities, including packaging, chemicals and capital equipment are subject to this program.

Yet, as large and comprehensive as Q1 is, each supplier relationship depends on one-on-one cooperation and communication. In the case of Kodak's eight-year relationship with multiwall bag supplier Graphic Packaging Corp., cooperation and mutual education have been hallmarks.

So has success. Graphic Packaging Corp. recently received a coveted Q1 Gold Award for the sixth year in a row. Concurrently, Kodak's defect rate for the particular type of multiwall photographic bag supplied solely by GPC has dropped from approximately 10,000 defects per million bags to a near-zero level for several years.

Kodak no longer performs routine inspection or keeps backup inventories of the bags. Instead, Kodak relies on as-needed access to GPC's computerized statistical process control records.

The polyethylene-lined kraft bag is used to ship rolls of unexposed photographic print paper to processing labs worldwide. The bags, in 45 different sizes to accommodate various paper sizes, must be light-tight and

Regular meetings involving all aspects of the program can prevent problems later on

strong enough to be shipped by common carrier. The unexposed paper is removed in darkrooms and loaded into printers.

Although certainly not glamorous, these bags are crucial, protecting not only the photographic paper on its way to labs, but also Kodak's reputation for quality. GPC's understanding of this was a key step.

"Open communication channels are an important part of the Quality First program with our vendors," explains James Schirmer, unit director of supplier quality in Kodak's materials management division.

"We work to give our suppliers a better understanding of our performance expectations, and the expectations our ultimate customers have for their product," he continues. "GPC bag-making operators visited Kodak as well as a photofinishing lab so they could see how the packaged product was utilized by our lab customers."

Early on, GPC personnel were even able to suggest improvements in the bag.

Kodak had experienced some pinholing when bag bottoms jammed in the folding machine during converting. GPC suggested turning the bags 180 degrees and using a different bottom fold pattern. This eliminated the problem almost completely.

Real-world SPC

The key to GPC's ability to attain such a high level of product quality for Kodak is the company's use of statistical process control, or SPC. Very simply, SPC involves gathering process data with computers and other electronic devices and analyzing these data to continually improve a manufacturing process. GPC has employed SPC for more than seven years.

"By controlling our process with SPC, we have gained an understanding of our process capability and have reduced our process variations," says Floyd Foster, GPC's manager of quality assurance.

Progress meetings head off problems. Here, S.C. Johnson and Placon personnel discuss quality control and production issues related to the roach bait line.

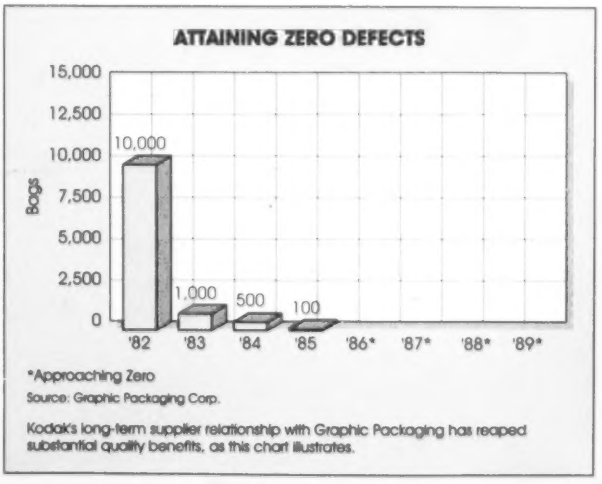
While the multiwall bags are converted at GPC, measurements are taken by an operator and electronically recorded into computerized data collectors. Control charts are displayed on monitors near the bag-making machines for real-time analysis and process control by both operators and supervisors.

For instance, bag dimensions are monitored and averaged in the computer, which displays any deviation from predetermined specs.

Off-line, collected SPC data is analyzed to determine the causes for any variation. This process yields the opportunity for continuous process improvement. In the early months of GPC's relationship with Kodak, SPC reports were routinely sent to Kodak headquarters. Now, GPC retains the data for Kodak.

Foster notes that the award-winning relationship with Kodak has yielded benefits, both material and intangible, for GPC.

"It's important to note that the [quality] award is presented by Kodak to our employees," he explains. "Each employee is presented an individual award for his or her accomplishments. This individual employee recognition has created a tremendous amount of employee pride in workmanship."



Kodak's long-term supplier relationship with Graphic Packaging has reaped substantial quality benefits, as this chart illustrates.

Beyond buzzwords

There's no denying that closer relationships between customers and suppliers, also called partnering, is a growing business trend of the 1990s.

In fact, the vendor certification trend seems to be expanding as packaging suppliers institute similar quality programs with *their* raw-material suppliers.

In today's cutthroat markets, there is an increasing realization thatIt just makes good business sense for the supplier to see how the product is used, and for the customer to understand the supplier's process.

American packagers need the cooperation of their suppliers to stay competitive. Packaging suppliers need long-term relationships with their customers to stay in business. ■

Editor's note: For another perspective on establishing or maintaining good relationships with packaging suppliers, see "The Art of Introducing New Technologies" in this issue.

PLEASE RATE THIS ARTICLE

How would you rate this article? To reply, circle the appropriate number on the reader service card:

Outstanding	451
Above Average	452
Average	453
Below Average	454

MELISSA LARSON
Senior Editor

"Long-term relationships that benefit both user and supplier are the goal of vendor certification. Efficiency and productivity boosts are gratifying, but sometimes the effect of simply letting in new ideas from outside the organization can yield surprising fringe benefits for the packager."

ADVERTISERS INDEX

AVI, Astro-Valcour, Inc.
INFO No.44,46,48 ..101,103,105
Accu-sort INFO No.56,57 102
*All-Fill, Inc. INFO No.96 ...147
Alloyd Co., Inc. INFO No.9 ...13
*Allpac, Inc. INFO No.8 12
American Fuji Seal
INFO No.27 57
*Arpak Plastics, Inc.
INFO No.61 119
Auger Mfg. Specialists
INFO No.94 146
Automated Packaging Systems,
Inc. INFO No.106 .....IBC
Avis INFO No.89 139

Barkley & Dexter Labs
INFO No.52 110
Bell-Mark Corp.
INFO No.75 128
*Branson Ultrasonics Corp.
INFO No.54 113

CMB Packaging Components
UK INFO No.112 .....98A
*CMS Gilbreth Packaging
Systems INFO No.98,99
.....148-149
Cahners Exposition Group
INFO No.60 118
Cambridge Wire Cloth Co.
INFO No.58 117
Classified Advertising 158-171
*Compacker INFO No.45 108
Container Products
INFO No.15 23
*Control Print, Division of
Dennison Co. INFO No.118,119
.....109
Cryovac, Division of W.R. Grace
INFO No.71 126
*Cyro Industries
INFO No.66 122

Diagraph, Corp.
INFO No.59,62,65,68
.....117,119,121,123
*Diversi-Plast Products
INFO No.7 11
*Doboy Packaging Machinery
INFO No.107 .....BC
Do-It Corp. INFO No. 78 130
DuPont Co.—Packaging Products
INFO No.36 84,85
DuPont Tyvek
INFO No.101 153
Durable Packaging Corp.
INFO No.41 98

*Eastman Chemical Products Inc.
INFO No.10,12,31 17,19,63
Econocorp INFO No.105 157
*Edson Pkg. Machine
INFO No.83 134

Formost Packaging Machines Inc.
INFO No.14 22

*Griffin-Rutgers Co., Inc.
INFO No.40 94
*Heat & Control/Ishida
INFO No.26 55
Himont Inc. INFO No.19 ...32,33
Hi-Speed Checkweigher Co., Inc.
INFO No.42 99
*Hoppmann Corp.
INFO No.103 155

ISPACK INFO No.43 100
Ilapak Inc.
INFO No.108-111 135
Image Watches, Inc.
INFO No.74 128
*Italian Trade Commission
INFO No.1 35-50
*Kayat INFO No.80 132
*Kiwi Coders Corp.
INFO No.113-116 .....IFC
Klockner-Pentaplast
INFO No.34 69-71
Ko-Pack Corp. of America
INFO No.84 147
*Krones INFO No.38 91

Lanier INFO No.79 131
*Loma International
INFO No.55 116
*Longford Equipment Int'l Ltd.
INFO No.76 129
Loveshaw Corp., The
INFO No.70 125

MRM/Elgin Corp.
INFO No.102 154
MSK Covertech, Inc.
INFO No.77 131
Markem Corp.
INFO No.21-25 51
Marsh Co. INFO No.100 151
Materials Transportation Co.
INFO No.72 126
*Matthews Inter'l
INFO No.35 31
*Mearl Corp. INFO No.82 133
Menasha Corp. INFO No.16 ...23
*Minnesota Automation
INFO No.85 136
Moen Industries
INFO No.47 104
Morin Packaging Systems, Inc.
INFO No.91 145
Mystic Management Systems, Inc.
INFO No.88 138

*Packaging Machinery Mfgs.
Institute
INFO No.50 107
Packrite INFO No.67 123
*Parkway Plastics, Inc.
INFO No.95 146
Paxall Clybourn Machinery
INFO No.13 20
Piepen Brock INFO No.18 83
Porelon, Inc. INFO No.33 66

*Quantum Chemical Corp.,
USI Division INFO No.4 ...4,5

R.A. Jones INFO No.37 89
Ramsey Technology, Inc.
INFO NO.49 106
*Raymond Automation Co.
INFO No.86 137
Rennco Packaging Machines
and Systems INFO No.64 ..121
Reynolds Flexible Packaging
INFO No.17 24,25
Rovema Packaging Machines
INFO No.32 65

SKF Handling Systems Co.
INFO No.104 156
Sharp Electronics
INFO No.53 111
Shell Chemical Co.
INFO No.6 10

*Tecnicam, Inc.
INFO No.69 124
Tharo Systems, Inc.
INFO No.93 145
*Thiele Engineering
INFO No.28-30 58,59
*Triangle Package Machinery Co.
INFO No.3 3

*United Resin Products, Inc.
INFO No.92 145

*Vertrod Corp. INFO No.63 ..120

Wayne Automation Corp.
INFO No.73 127
Westvaco INFO No.5,39,90
.....8-9,92-93,140-141
Willett America Inc.
INFO No.81 132
Wyle Laboratories
INFO No.87 138

ADVERTISING SALES OFFICES

DES PLAINES, ILL. 60017-5080
Cahners Publishing Co.
1350 E. Touhy Ave. P.O. Box 5080

John Blatnik
Publisher

Edwin O. Landon
Jim Harvey
(708) 635-8800
Fax: (708) 635-6856

WEST COAST SALES
Jim Harvey

NEW YORK CITY
Denise Camens

NEW JERSEY
Denise Camens

NEW YORK, NY 10011-5381
Cahners Publishing Co.
249 W. 17th St.
(212) 645-0067
Fax: (212) 242-6987

WAYNE, PA. 19087-1749
Cahners Publishing Co.
487 Devon Park Dr.
Suite 206
(215) 293-1212
Fax: (215) 293-0359

Steve Osborne
(215) 293-1212

ATLANTA, GA.
Steve Osborne

STAMFORD, CONN. 06904-2277
Cahners Publishing Co.
8 Stamford Forum
P.O. Box 10277
(203) 328-2500
Fax: (203) 357-9258

Raymond J. Kish
(203) 328-2580

CLASSIFIED RECRUITMENT
Carole Young Orlando
Manager
Cahners Plaza
1350 E. Touhy Ave. P.O. Box 5080
Des Plaines, Ill. 60017-5080
Fax: (708) 635-6856

EUROPE
Stuart Smith
Cahners Publishing Co.
27 Paul Street
London EC2A4JU
ENGLAND
Telephone 01-4471-628 7030
Telex 914911
Fax: 01-628 5984

TAIWAN
Mayco T.S. Lou
International Services, Inc.
RM 902,2, Chung Hsiao
P.O. Box 53-1039
Sec. 4, Taipei, Taiwan R.O.C.
Telex: (785) 13340
Phone: 02-7763196

ISRAEL
Asa Talbar
Talbar Media
P.O. Box 22917
Tel Aviv 61228
Israel

Pam Raca
Advertising Services Mgr.
Cahners Plaza
1350 E. Touhy Ave. P.O. Box 5080
Des Plaines, Ill. 60017-5080
(708) 635-8800
Fax: (708) 635-6856

PHOTOCREDITS

Cover: Vukasanovich Inc. **User/Supplier:** Photos supplied by Placon. **Line of the Month:** Jack Grossman, Images Photographics; Mark Goldstein, artwork. **Case Packers:** Photos supplied by Wayne Automation, R. A. Pearson Co. **Paper-Based Bags:** Bob Tanaka, illustration.

*Indicates Advertiser in Packaging 1990 Buyers Guide.

Cahners Publishing Company, A Division of Reed Publishing USA ☐ Specialized Business Magazines for Building & Construction ☐ Research ☐ Technology ☐ Electronics ☐ Computing ☐ Printing ☐ Publishing ☐ Health Care ☐ Foodservice ☐ Packaging ☐ Environmental Engineering ☐ Manufacturing ☐ Entertainment ☐ Home Furnishings ☐ and Interior Design. Specialized Consumer Magazines for Child Care ☐ Boating ☐ and Wedding Planning.

PACKAGING formerly Package Engineering including Modern Packaging (ISSN 0746-3820) is published 13 times a year by The Cahners Publishing Company, A Division of Reed Publishing USA, 275 Washington Street, Newton MA 02158-1630. Terrence M. McDermott, President; Charles E. Moodhe, Senior Vice President/General Manager, Chicago Division; Jerry D. Neth, Senior Vice President/Publishing Operations; J.J. Walsh, Senior Vice President/Finance; Thomas J. Dellamaria, Senior Vice President/Production and Manufacturing; Ralph Knupp, Vice President/Human Resources. Circulation records are maintained at Cahners Publishing Company, 44 Cook Street, Denver, CO 80206-5800. Phone 303/388-4511. Second-class postage paid at Denver, CO 80206-5800 and additional mailing offices. Postmaster: Send address corrections to PACKAGING, P.O. Box 173377, Denver, CO 80217-3377. PACKAGING formerly Package Engineering including Modern Packaging, copyright 1990 by Reed Publishing USA; Ronald G. Segel, Chairman and Chief Executive Officer; Robert L. Krakoff, President and Chief Operating Officer; William M. Platt, Senior Vice President. PACKAGING formerly Package Engineering including Modern Packaging is distributed throughout the United States to executives with buying and specifying responsibility for packaging machinery, containers, materials and supplies. Annual subscription rates for non-qualified people: USA, 1 year: $40, 2 years, $150; Canada/Mexicao, 1 year: $90, 2 years, $170; other countries, 1 year, $120; $165 air mail; 2 years $220, $310 air mail. Single copies of the Annual Buyers Guide, $30. Single copies of the Packaging Line Planning Guide, $25. Single copies of regular issues are available for $10, $10 and $10 (USA, Canada/Mexico and foreign). Please address all subscription mail to Kris Cunningham, 44 Cook Street, Denver, Colorado, 80206-5800. REPRINTS OF PACKAGING formerly Package Engineering including Modern Packaging articles are available in quantities of 500 or more. For a specific quotation, contact Andrea Marwitz, Cahners Plaza, 1350 E. Touhy Avenue, P.O. Box 5080, Des Plaines, Ill. 60017-5080; 708/635-8800.